AMENDMENTS TO THE CLAIMS

1. (currently amended) A communications network for a metropolitan area comprising:

a plurality of access multiplexers, each access multiplexer operable to provide multiplexing of data packets from a plurality of end-users onto a sparse dense wavelength division multiplexed (S-DWDM) wavelength; the S-DWDM wavelength having a first separation being multiple of a second separation in a dense wavelength division multiplex (DWDM) wavelength plan used in a core network;

a photonic switch, coupled to the access multiplexers via fiber optic cable for carrying the S-DWDM wavelengths, and operable to consolidate the S-DWDM wavelengths into a ~~dense wavelength division multiplexed~~ (DWDM [[)]] signal for transmission; and

a core node being part of the core network, coupled to the photonic switch via a fiber optic cable for carrying the DWDM signal, and operable to route the data packets within the communications network or out to a long haul network.

2. (currently amended) The [[A]] network as claimed in claim 1 wherein the photonic switch includes a multi-wavelength source for generating DWDM quality wavelengths for supplying the access multiplexers with unmodulated wavelengths upon which to multiplex data packets.

3. (currently amended) The [[A]] network as claimed in claim 1 wherein the core node includes a photonic switch and a packet switch.

4. (currently amended) The [[A]] network as claimed in claim 3 wherein the photonic switch includes a multi-wavelength source for generating DWDM quality wavelengths for supplying the packet switch with unmodulated wavelengths upon which to multiplex data packets.

5. (original) The network of claim 1 wherein the data packets are Ethernet packets.

6. (original) The network of claim 5 wherein a portion of the data packets are transmitted from a particular end-user to a particular access multiplexer over a local loop, connecting

the particular end-user to the particular access multiplexer, using a digital subscriber line DSL protocol.

7. (original) The network of claim 6 wherein the DSL protocol is a very-high-data-rate VDSL protocol.

8. (original) The network of claim 1 wherein the photonic switches are capable of switching at the wavelength, group of wavelength, and fiber level.

9. (original) The network of claim 1 wherein the core node is capable of switching at the wavelength, group of wavelength, and fiber level.

10. (original) The network of claim 9 wherein the core node is capable of switching data packets based on a service to which the data packet pertains.

11. (original) The network of claim 10 further comprising a plurality of photonic switches, each of the photonic switches connected to at least one other photonic switch and the core node.

12. (original) The network of claim 11 further comprising a plurality of core nodes, each of core nodes connected to at least one other core node.

13. (currently amended) The [[A]] network as claimed in claim 1 wherein the core node includes a wavelength converter for converting one wavelength to another wavelength to provide an end-to-end photonic connection across the network.

14. (currently amended) The [[A]] network as claimed in claim 13 wherein the wavelength converter includes opto-electronic devices.

15. (currently amended) The [[A]] network as claimed in claim 14 wherein the wavelength converter includes photonic devices.

16. (currently amended) A method of operating a metropolitan photonic network comprising the steps of:

providing to an access multiplexer a dense wavelength division multiplex (DWDM) quality unmodulated wavelength from a source remote therefrom;

modulating the wavelength with packet data at the access multiplexer;

multiplexing the wavelength together with other modulated wavelengths to form a sparse dense wavelength division multiplexed (S-DWDM) signal, the S-DWDM signal having a first separation being multiple of a second separation in a dense wavelength division multiplex (DWDM) wavelength plan used in a core network;

transporting the S-DWDM signal to a metro photonic switch;

demultiplexing the S-DWDM signal to a plurality of wavelengths;

switching each of the plurality of wavelengths on a per wavelength basis;

multiplexing different switched wavelengths to form a ~~dense wavelength division multiplex~~ (DWDM[[]]) signal; and

launching the DWDM signal toward a core node in the ~~metro~~ core network.

17. (currently amended) The [[A]] method as claimed in claim 16 wherein the step of providing to an access multiplexer a DWDM quality unmodulated wavelength includes generating a plurality of DWDM quality wavelengths adjacent to a metro photonic switch and coupling one of the plurality of wavelengths to a fiber from the metro photonic switch to the access multiplexer.

18. (currently amended) The [[A]] method as claimed in claim 17 wherein the step of modulating the wavelength with packet data at the access multiplexer includes the step of receiving packet data from the access network and modulating the unmodulated wavelength from the metro photonic switch therewith.

19. (currently amended) The [[A]] method as claimed in claim 18 wherein the step of multiplexing the wavelength together with other modulated wavelengths to form a sparse dense wavelength division multiplexed (S-DWDM) signal includes the step of selecting wavelengths having a predetermined separation.

20. (currently amended) The [[A]] method as claimed on claim 19 wherein the DWDM signal includes N wavelengths and the predetermined separation is s, where N>s and N

and s are integers.

21. (currently amended) The [[A]] method as claimed in claim 20 wherein N is 40 and s is 5.

22. (currently amended) A photonic metropolitan network comprising:

means for providing to the access multiplexer a dense wavelength division multiplex (DWDM) quality unmodulated wavelength from a source remote therefrom;

an access multiplexer including means for modulating the wavelength with packet data at the access multiplexer, and means for multiplexing the wavelength together with other modulated wavelengths to form a sparse dense wavelength division multiplexed (S-DWDM) signal, the S-DWDM signal having a first separation being multiple of a second separation in a dense wavelength division multiplex (DWDM) wavelength plan used in a core network;

means for transporting the S-DWDM signal to the metro photonic switch;

a metro photonic switch including means for demultiplexing the S-DWDM signal at the metro photonic switch to a plurality of wavelengths,

means for switching each of the plurality of wavelengths on a per wavelength basis, ~~and~~

means for multiplexing different switched wavelengths to form a ~~dense wavelength division multiplex~~ (DWDM) signal; and

means for transporting the DWDM signal to a core node in the ~~metro~~ core network~~; and a core node for switching the packet data to an appropriate destination~~.

23. (currently amended) A communications network for a metropolitan area comprising:

a plurality of access multiplexers, each access multiplexer operable to provide multiplexing of data packets from a plurality of end-users onto a sparse dense wavelength division multiplexed (S-DWDM) wavelength, the S-DWDM wavelength having a first separation being multiple of a second separation in a dense wavelength

division multiplex (DWDM) wavelength plan used in a core network;

a photonic switch, coupled to the access multiplexers via fiber optic cable for carrying the S-DWDM wavelengths, and operable to consolidate the S-DWDM wavelengths into a ~~dense wavelength division multiplexed~~ (DWDM[[)]] signal for transmission;

a core node, coupled to the photonic switch via a fiber optic cable for carrying the DWDM signal, and operable to route the data packets within the communications network or out to a long haul network; and

a control plane coupled to the photonic switch and the core node for effecting end-to-end photonic connectivity.

24. (currently amended) The [[A]] communications network as claimed in claim 23 wherein the core node includes a packet router and a photonic switch coupled together to effect packet level switching for packets originating at the access multiplexers.

25. (currently amended) The [[A]] communications network as claimed in claim 24 wherein the core node includes a wavelength converter coupled to the photonic switch to effect an all photonic connection through the network.

26. (currently amended) The [[A]] communications network as claimed in claim 23 wherein the photonic switch includes a first plurality of input ports and a second plurality of output ports, with the first being greater than the second, whereby the photonic switch effects concentration of the wavelengths from the access multiplexers.